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DAVID S ALAVI  
2852 WILLAMETTE ST  
#402  
EUGENE, OR 97405-8200

EXAMINER
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KLAYMAN, AMIR ARIE

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* CRAIG T. YEHLE

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Appeal 2015-003776  
Application 12/581,791  
Technology Center 3700

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Before JOHN C. KERINS, JAMES P. CALVE, and SCOTT A. DANIELS,  
*Administrative Patent Judges.*

CALVE, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from the final rejection of claims 1 and 3–7. Appeal Br. 2–3. Claims 8, 9, 11–16, and 18–22 are withdrawn. *Id.* Claims 2, 10, and 17 are cancelled. *Id.* at 7–11 (Claims Appendix). We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM and designate the affirmance as a NEW GROUND OF REJECTION pursuant to our authority under 37 C.F.R. § 41.50(b).

### CLAIMED SUBJECT MATTER

Appellant claims compound bow 10 with flexible cable guard 40 that displaces power cables 22 laterally so that cables 22 do not interfere with an arrow in use. Spec. ¶ 29. Because arrow shaft 52 is narrower than the width of arrow fletch 54 (feathers, fins), cable guard 42 displaces cables 22 by a greater lateral distance D1 when the arrow is first mounted on bowstring 20 to allow fletch 54 to clear cables 22, and by a lesser lateral distance D2 when bowstring 20 is drawn and only narrow shaft 52 is next to cables 22. Lateral displacements D1, D2 are shown in top cross-section views of Appellant's Figures 2A and 2B, reproduced below.

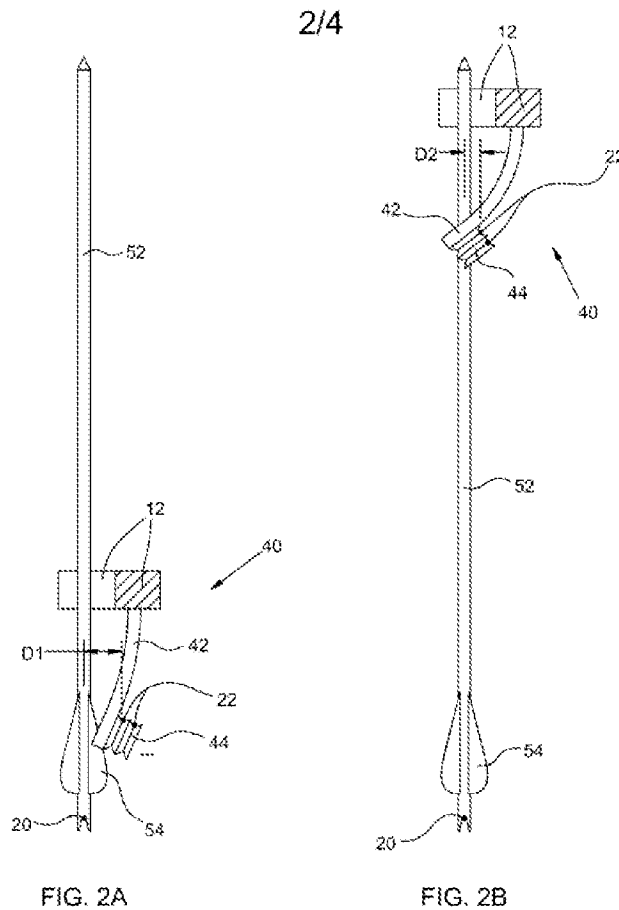


Figure 2A shows lateral spacing D1 *before* bowstring 20 is drawn. Figure 2B shows smaller lateral spacing D2 *after* bowstring 20 is drawn.

Claim 1, the sole independent claim on appeal, is reproduced below.

1. A compound archery bow comprising:
  - (a) a riser and first and second bow limbs attached to the riser;
  - (b) first and second pulley members rotatably mounted on the first and second bow limbs, respectively;
  - (c) a draw cable engaged with the first and second pulley members;
  - (d) one or more additional cables coupled to the first and second bow limbs; and
  - (e) a cable guard comprising (1) an elongated, elastically deformable, non-articulated member attached to and extending backward from the riser, and (2) a cable retainer engaged with the elongated member and with each additional cable,
  - (f) wherein the bow limbs, the draw cable, and the additional cables are arranged so that pulling the draw cable to draw the bow causes (1) the pulley members to rotate and let out the draw cable, (2) each additional cable to be taken up or let out by at least one of the pulley members, and (3) the first and second bow limbs to bend toward one another;
  - (g) wherein the cable guard is arranged with the bow at brace to retain a central portion of each additional cable displaced laterally from a shooting plane of the bow by a first cable displacement distance  $D1$ , which first cable displacement distance  $D1$  is greater than or about equal to a distance  $F$  that fletching of an arrow nocked onto the draw cable extends transversely from the shooting plane toward the one or more additional cables;
  - (h) wherein the cable guard is arranged with the bow drawn to bend toward the shooting plane and to retain the central portion of at least one of the one or more additional cables displaced laterally from the shooting plane by a second cable displacement distance  $D2$ , which second cable displacement distance  $D2$  is greater than or about equal to a distance  $S$  that a shaft

of the arrow nocked onto the draw cable extends transversely from the shooting plane toward the one or more additional cables; and  
(i) wherein the distance F is larger than the second cable displacement distance D2.

#### REJECTIONS

Claims 1, 3, 4, 6, and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over McPherson (US 2011/0073090 A1, pub. Mar. 31, 2011).

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over McPherson and Walker (US 4,903,678, iss. Feb. 27, 1990).

Claims 1, 3, and 5–7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson (US 5,791,324, iss. Aug. 11, 1998).

#### ANALYSIS

##### *Obviousness rejections over McPherson or Johnson*

The Examiner found that McPherson teaches a compound bow, as recited in claim 1, including cable guard 330 having a flexible elongated member (body portion 331) and cable retainer (cable engaging portion 334). Ans. 2. The Examiner also found that McPherson inherently discloses a displacement distance of the cable guard and additional cables to allow the shooting of an arrow but does not specify that this distance is greater than or about the distance F (fletching of the arrow) prior to drawing the bow, or greater than or about a distance S (the arrow shaft) at the draw position. *Id.* at 2–3. The Examiner determined, however, that the claimed cable distances D1, D2 could be discovered as optimum or workable ranges by routine experimentation where the general conditions of the claim are known in the prior art and the claimed distances lack criticality. *Id.* at 3.

The Examiner made essentially the same findings to reject claims 1, 3, and 5–7 as unpatentable over Johnson. Ans. 4–5. The Examiner found that Johnson discloses an archery bow with a riser, pulleys, cable guard, and additional cables, and a cable displacement is inherent to allow shooting of an arrow where the claimed distances D1, D2 would have been obvious for the same reasons as in the rejection of the claims over McPherson. *Id.*

Appellant presents the same arguments for the rejection of claims 1, 3, 4, 6, and 7 over McPherson and claims 1, 3, and 5–7 over Johnson and only for claim 1. *See* Appeal Br. 3–6. We select claim 1 as representative of both groups. 37 C.F.R. § 41.37(c)(1)(iv). The dependent claims rejected under each ground stand or fall with claim 1 as to those rejections. Appeal Br. 6.

Appellant argues that McPherson and Johnson are silent with respect to the distance between the shooting plane and cables retained by the cable guard and neither reference discloses a cable guard that permits the retained cables to be retained a distance that is transverse to the shooting plane by less than the transverse extent of the fletching of the arrow when the bow is drawn or in any other arrangement. Appeal Br. 3. Appellant also concedes that McPherson and Johnson disclose an archery bow with a cable guard that is flexible and bends inwardly toward a shooting plane as the bow is drawn (*id.*; Reply Br. 1), but neither McPherson nor Johnson discloses the “general conditions” of claim 1 because no specific distances between the retained cables and shooting plane are disclosed and there is no teaching that the retained cables ever approach so closely to the shooting plane, i.e., to a distance smaller than the transverse extent of the arrow’s fletching ( $D2 < F$ ) (Appeal Br. 4–5; Reply Br. 1–2). Appellant contends that neither reference teaches all of the structural limitations of claim 1. Appeal Br. 5.

Claims 1, 3, and 5–7 as unpatentable over Johnson

For the reasons that follow, we sustain the Examiner’s rejections of claim 1 as unpatentable over Johnson, but we designate our affirmance as a New Ground of Rejection to allow Appellant the opportunity to respond to our analysis where it may differ from that of the Examiner.

The Examiner’s determination that claim 1 is unpatentable over Johnson is supported by a preponderance of evidence. *See* Ans. 5; *cf.* Final Act. 2. Johnson discloses a compound archery bow including riser (bow 34), first and second limbs 36, 38, first and second pulleys 42, 44 that are mounted to first and second limbs 36, 38, a draw cable (bowstring 50), additional cables 46, 48, elongated, elastically-deformable cable guard 10 extending from riser 34 (Johnson, 3:1–63) with cable retainer (fitting 54), wherein drawing bowstring 50 causes pulley members 42, 44 to rotate and first and second bow limbs 36, 38 to bend toward one another and cables 46, 48 to move rearwardly (*id.* at 3:59–64.) Appellant does not apprise us of error in the Examiner’s findings that Johnson discloses elements (a)–(f) of claim 1. *See* Ans. 2; Appeal Br. 2–5.

Regarding elements (g)–(i) of claim 1, which recite first and second cable displacements D1, D2, and distance F, as the archery bow is operated, Appellant admits that Johnson’s archery bow includes a flexible cable guard that bends inward toward the shooting plane as the bow is drawn. *Id.* at 3. A preponderance of evidence supports a finding that Johnson discloses each of the distances recited in claim 1. First, Johnson discloses that flexible rod 12 of the cable guard torques cables 46, 48 laterally outwardly away from the path of bowstring 50 and an arrow mounted thereon for firing and this corresponds to the claimed first cable displacement D1. Johnson, 3:50–54.

Johnson teaches a first cable displacement distance corresponding to the claimed distance D1 that is greater than or about equal to distance F that arrow fletching extends transversely from the shooting plane when a bow is at brace (i.e., before the arrow is drawn), as claimed. Johnson discloses that

when the bowstring 50 is released after full draw and rushes forward, the cable-torquing effect of rod 12 increases, as cables 46 and 48 move forward relative to rod 12 *to cause rod 12 to provide the necessary increased clearance for the arrow and its fletching as it is propelled forward by bowstring 50 during firing of the arrow.*

*Id.* at 3:65–4:3 (emphasis added). Cable guard 10 displaces cables laterally by a distance D1 that is greater than or about equal to a distance F of the arrow fletching in a transverse direction, as recited in element (g) of claim 1.

Johnson also discloses that cables 46, 48 are subject to less torque from cable guard and flexible rod 12, 16 as bowstring 50 is drawn, but the reduced torque (and reduced lateral displacement of cables 46, 48 away from the shooting plane) is acceptable because “the fletched end of the arrow on bowstring **50** is remote from cables **46** and **48**.” *Id.* at 3:50–64. Johnson discloses a second cable displacement distance corresponding to the claimed distance D2 that is greater than or about equal to a distance S of the arrow shaft but less than a distance of arrow fletching F as in elements (h) and (i).

Johnson thus teaches that as the bow is fired from a full draw, cable guard 10 moves cables 46, 48 laterally outwardly via increased torque to provide increased clearance that is greater than the arrow fletching and this distance corresponds to distance D1. *Id.* at 3:65–4:3. Johnson also teaches that cable guard 10 reduces the lateral displacement to distance D2 when the bow is drawn and the arrow fletching is remote from cables. *Id.* at 3:59–64.

We also find that the D1 and D2 distances recited in claim 3 would have been obvious to arrive at as optimization of a result effective variable based on dimensions of arrow shafts and fletching absent any evidence of criticality or unexpected results for these ranges other than the dimensions of prior art arrows. Spec. ¶ 36. In this context, optimization means minimizing lateral displacement to what is necessary to allow an arrow to clear the cross cables in brace and drawn conditions. Moreover, ranges taught by Johnson would overlap and thereby create a *prima facie* case of obviousness, which is not rebutted by evidence of criticality or unexpected results by Appellant.

Johnson provides the motivation for this optimization by teaching that cable guards provide the necessary clearance for an arrow and bowstring, but *inflexible* rods with maximum displacement cause bow limb distortion and excessive cable wear that requires replacement of the cables and bow limbs. *Id.* at 1:11–28. Johnson’s *flexible* cable guard reduces this lateral displacement when a bow is drawn and the arrow fletching is remote from cables 46, 48 and then increases cable displacement as the arrow fletching approaches cables 46, 48 during firing for improved results. *Id.* at 3:50–4:8. Johnson thus recognizes that lateral displacement of cables is necessary to operate a compound archery bow but minimizes the lateral displacement of cables 46, 48 to only what is needed to allow the arrow shaft or fletching to clear cables 46, 48 during operation via a *flexible* cable guard.

Appellant has not provided any evidence of criticality or unexpected results due to these claimed distances. Appeal Br. 2–5; Reply Br. 2. The Specification discloses that any suitable distances can be chosen for D1 and D2. Spec. ¶ 36; Ans. 7–8. Appellant discloses that cable guard features are preferably chosen according to known methods. *See* Spec. ¶¶ 30–31.

Johnson also discloses cable block (fitting 54) that slides on rod 12, as recited in claim 5, and metal or plastic for elongated member 12, as recited in claim 6. *Id.* at 3:3–5. These materials render obvious an elastic modulus of less than about 10 Mpsi in claim 7, by falling within or overlapping this claimed range or through routine experimentation to yield expected results where Appellant has not demonstrated unexpected results or criticality.

Thus, we sustain the rejection of claims 1, 3, and 5–7 as unpatentable over Johnson but designate our affirmance as a New Ground of Rejection.

Claims 1, 3, 4, 6, and 7 as unpatentable over McPherson

A preponderance of evidence supports a determination that claim 1 is unpatentable over McPherson. McPherson teaches an archery bow 10 with riser 17, first and second bow limbs 11, 12, first and second pulley members (rotatable members 12, 14), drawstring 20, additional cables 21, 22, and a cable guard 30, wherein pulling draw cable 20 causes pulley members 12, 14 to rotate and take up additional cables 21, 22. *See* McPherson ¶¶ 24, 25, 28, 29, Figs. 1, 2. Therefore, McPherson discloses elements (a)–(f) of claim 1. Appellant does not apprise us of error in the Examiner’s findings that McPherson teaches elements (a)–(f) of claim 1. *See* Ans. 2; Appeal Br. 2–5.

Regarding the cable displacement distances  $D1$ ,  $D2$ ,  $D2 \leq F$  recited in claim 1, McPherson discloses that as compound archery bow 210 is drawn, pulley shafts 15, 16 move toward one another and the lateral displacement of cross cables 21, 22 can decrease at the center of their span, which also is at cable guard 80. *Id.* ¶ 30. McPherson also teaches that the amount of lateral force applied to cross cables 21, 22 by cable guard 230 also can decrease as the amount of lateral displacement decreases because less lateral force is needed when cross cables 21, 22 are displaced less in a lateral direction. *Id.*

McPherson teaches that the lateral force applied to cross cables 21, 22 at full draw can be less than the lateral force applied to cross cables 21, 22 at brace condition. *Id.* This disclosure supports a finding that the lateral force applied to cables 21, 22 and their consequent lateral displacement is greater in a brace condition when arrow fletching is adjacent to cross cables 21, 22 and less in a drawn condition when arrow fletching is remote from cross cables 21, 22 and the thinner arrow shaft is adjacent to cross cables. In this regard, McPherson also discloses that the lateral force (and thus the lateral displacement) applied to cross cables 21, 22 (221, 223) by cable guard 230 *increases* as a bow goes from a drawn position to a brace position. *Id.* ¶ 31.

McPherson, like Johnson, discloses a variable displacement cable guard that provides more lateral displacement of cross cables when a bow is in a brace condition and arrow fletching is adjacent to the cables and less lateral displacement as the bow is drawn and the thinner arrow shaft is adjacent to the cable guard and cross cables. Appellant acknowledges that McPherson is configured to operate in this manner. *See* Appeal Br. 3.

Appellant also admits that prior art compound bows with articulated cable guards such as that disclosed in US 5,718,213 (Gallops) teach reduced lateral displacement as a bow is drawn because “the additional cables need only be displaced enough to clear the shaft of the arrow” and as such the reduced lateral displacement “reduces the lateral force components exerted by the cables.” Spec. ¶ 26; *see* US 5,718,213, 1:41–50, 4:3–10, Figs. 2, 2A. Like Johnson, Gallops teaches reduced outward lateral displacement of cable guard (cable retaining means 30) as bowstring 8 is drawn to reduce the frictional force of cable guard 30 on cables 10, 12 and the torque on bow limbs. Gallops, 4:3–15, 2:19–34.

A skilled artisan reading McPherson's disclosure of reduced lateral displacement of cross cables 21, 22 when the bow is in a drawn position and only the narrow arrow shaft is adjacent to the cables and aware of teachings of Johnson and Gallops to use reduced lateral displacement of cross cables to reduce the amount of lateral displacement (and resulting stress on the bow limbs and cables) to only that which is needed to avoid interference with an arrow shaft in a drawn position or arrow fletching in a brace condition would have been motivated to minimize McPherson's lateral displacement to the amount of lateral displacement that is necessary to allow the arrow fletching to clear the cross cables in a brace condition and the arrow shaft to clear the cables in a drawn condition. Such optimization of the variable displacement of McPherson would render obvious the claimed displacement distances  $D1$ ,  $D2$ , and  $D2 \leq F$ , as recited in claim 1.

As a person of ordinary creativity, a skilled artisan in the compound bow art would recognize based on the teachings of Johnson and Gallops that cable guards are needed to displace cross cables out of the shooting plane of an arrow so the cross cables do not affect the draw or release of the arrow by touching the arrow shaft or the fletching. However, a skilled artisan also would recognize, based on these prior art teachings, that lateral displacement of the cable guards comes at a cost – excessive cable wear and bow limb distortion. Johnson, 1:21–29; Gallops, 1:41–50. Thus, a skilled artisan would have been motivated to minimize the displacement of the cross cables by reducing the force applied to those cross cables by the cable guard to only that which is necessary to displace the cross cables out of the shooting path of the arrow, i.e., out of contact with the fletching in a brace condition and out of contact with the arrow shaft in a drawn condition.

These teachings of the prior art would have informed a skilled artisan that such variables are result effective and would have provided teaching and motivation to modify McPherson to provide only the lateral displacement required to mount and shoot an arrow, thus rendering obvious the claimed displacement distance  $D1$ ,  $D2$ , and  $D2 \leq F$ . Optimization in this context is minimizing lateral displacement to what is necessary to allow an arrow to clear the cross cables in brace and drawn conditions. Lateral displacement beyond that merely stresses bow components without any resulting benefit.

Moreover, McPherson teaches that minimizing lateral displacement in the drawn condition also reduces noise and vibrations present in cables 21, 22. McPherson ¶ 31. This teaching provides an additional reason to modify McPherson to minimize the lateral displacement of cross cables 21, 22 in the drawn condition to avoid interference with the arrow shaft and no more, i.e., to the claimed displacement distance  $D2$ , which is less than the fletching  $F$ .

For the foregoing reasons, and absent any evidence of unexpected results or criticality of the claimed ranges, we sustain the rejection of claim 1 but designate our affirmance as a New Ground of Rejection.

For similar reasons, we determine that the claimed ranges of  $D1$  and  $D2$  in claim 3 would have been obvious in view of the teachings to minimize the lateral displacement to what is necessary to clear the arrow fletching and arrow shaft in brace and drawn conditions. A skilled artisan would have arrived at displacements for known prior art arrows that would have fallen within the claimed ranges for  $D1$ , and  $D2$  and rendered those ranges *prima facie* obvious and Appellant has not provided any evidence of unexpected results or criticality for the claimed ranges other than their correspondence to dimensions of known arrow fletching and shafts. Spec. ¶ 36.

McPherson teaches journaled wheels (cable engaging portions 334, 434 in Figs. 3, 4) as recited in claim 4 and elongated material of metal alloy, composite material, and plastic as recited in claim 6. McPherson ¶ 33. The materials would have rendered obvious an elastic modulus of less than about 10 Mpsi as recited in claim 7, by falling within or overlapping this claimed range or through routine experimentation to yield expected results where Appellant has not demonstrated unexpected results or criticality for this range but indicates that the materials can be selected according to known methods. *See Spec.* ¶¶ 30–31.

Therefore, we sustain the rejection of claims 1, 3, 4, 6, and 7 as being unpatentable over McPherson, as evidenced by or in view of Johnson and Gallops, but designate our affirmance as a New Ground of Rejection.

*Claim 5 as unpatentable over McPherson and Walker*

Appellant does not present any arguments for the rejection of claim 5 as unpatentable over McPherson and Walker. Appeal Br. 2–6. We sustain this rejection in view of Walker’s teaching of a sliding cable block and the Examiner’s determination that it would have been obvious to substitute this block for McPherson’s cable guard as a simple substitution. Final Act. 4. However, we designate our affirmance as a New Ground of Rejection in view of our affirmance of claim 1 as unpatentable over McPherson as a New Ground of Rejection and claim 5’s dependency therefrom.

DECISION

We affirm all of the rejections of claims 1 and 3–7.

As discussed above, we denominate those affirmances as NEW  
GROUNDS OF REJECTION:

Claims 1, 3, 4, 6, and 7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over, McPherson.

Claims 1, 3, and 5–7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Johnson.

Claim 5 is rejected under 35 U.S.C. § 103(a) as being unpatentable over McPherson and Walker.

37 C.F.R. § 41.50(b) provides that “[a] new ground of rejection pursuant to this paragraph shall not be considered final for judicial review.” 37 C.F.R. § 41.50(b) also provides that the Appellant, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options *with respect to the new grounds of rejection* to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new Evidence relating to the claims so rejected, or both, and have the matter considered by the examiner, in which event the proceeding will be remanded to the examiner. . . .

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record. . . .

Should Appellant elect to prosecute further before the Examiner pursuant to 37 C.F.R. § 41.50(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to affirmed rejections, the effective date of the affirmance is deferred until conclusion of the prosecution before the Examiner unless, as a mere incident to the limited prosecution, the affirmed rejections are overcome.

If Appellant elects prosecution before the Examiner and this does not result in allowance of the application, abandonment or a second appeal, this

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case should be returned to the Patent Trial and Appeal Board for final action on the affirmed rejections, including any timely request for a rehearing.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED; 37 C.F.R. § 41.50(b)